FLUVIEW

A Weekly Influenza Surveillance Report Prepared by the Influenza Division

2011-2012 Influenza Season
Week 18 ending May 5, 2012

All data are preliminary and may change as more reports are received.

Synopsis: During week 18 (April 29-May 5, 2012), influenza activity declined nationally and in most regions, but remained elevated in some areas of the United States.

- **U.S. Virologic Surveillance**: Of the 2,118 specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division, 291 (13.7%) were positive for influenza.
- **Pneumonia and Influenza (P&I) Mortality Surveillance**: The proportion of deaths attributed to P&I was below the epidemic threshold.
- **Influenza-Associated Pediatric Mortality**: Two influenza-associated pediatric deaths were reported. One was associated with an influenza B virus and 1 was associated with an influenza A virus for which the subtype was not determined.
- **Outpatient Illness Surveillance**: The proportion of outpatient visits for influenza-like illness (ILI) was 1.4%, which is below the national baseline of 2.4%. All regions reported ILI below region-specific baseline levels. Two states experienced low ILI activity; New York City and 48 states experienced minimal ILI activity, and the District of Columbia had insufficient data to calculate ILI activity.
- **Geographic Spread of Influenza**: Two states reported widespread geographic activity; 8 states reported regional influenza activity; 12 states reported local activity; the District of Columbia, Puerto Rico, and 28 states reported sporadic activity, and Guam and the U.S. Virgin Islands reported no influenza activity.

National and Regional Summary of Select Surveillance Components

	Data for current week			Data cumulative since October 2, 2011 (Week 40)				
HHS Surveillance Regions*	**Out-patient ILI†**	**% of respiratory specimens positive for flu‡**	**Number of jurisdictions reporting regional or widespread activity§**	**A (H3)**	**2009 H1N1**	**A (Subtyping not perfor-med)**	**B**	**Pediatric Deaths**
Nation	Normal	13.7%	10 of 54	10,304	3,844	4,132	2,507	22
Region 1	Normal	29.8%	4 of 6	398	101	91	112	0
Region 2	Normal	16.2%	2 of 4	229	195	149	146	1
Region 3	Normal	26.2%	1 of 6	802	154	206	275	1
Region 4	Normal	13.5%	0 of 8	577	206	1359	324	4
Region 5	Normal	29.8%	0 of 6	2,696	200	128	273	1
Region 6	Normal	5.4%	0 of 5	307	454	831	203	5
Region 7	Normal	8.6%	0 of 4	1,362	159	276	52	1
Region 8	Normal	14.2%	1 of 6	1,498	1,118	663	87	0
Region 9	Normal	23.9%	1 of 5	1,634	862	393	366	8
Region 10	Normal	29.9%	1 of 4	801	395	36	669	1

*****HHS regions (Region 1 CT, ME, MA, NH, RI, VT; Region 2: NJ, NY, Puerto Rico, U.S. Virgin Islands; Region 3: DE, DC, MD, PA, VA, WV; Region 4: AL, FL, GA, KY, MS, NC, SC, TN; Region 5: IL, IN, MI, MN, OH, WI; Region 6: AR, LA, NM, OK, TX; Region 7: IA, KS, MO, NE; Region 8: CO, MT, ND, SD, UT, WY; Region 9: AZ, CA, Guam, HI, NV; and Region 10: AK, ID, OR, WA).

† Elevated means the % of visits for ILI is at or above the national or region-specific baseline.

‡ National data are for current week; regional data are for the most recent three weeks.

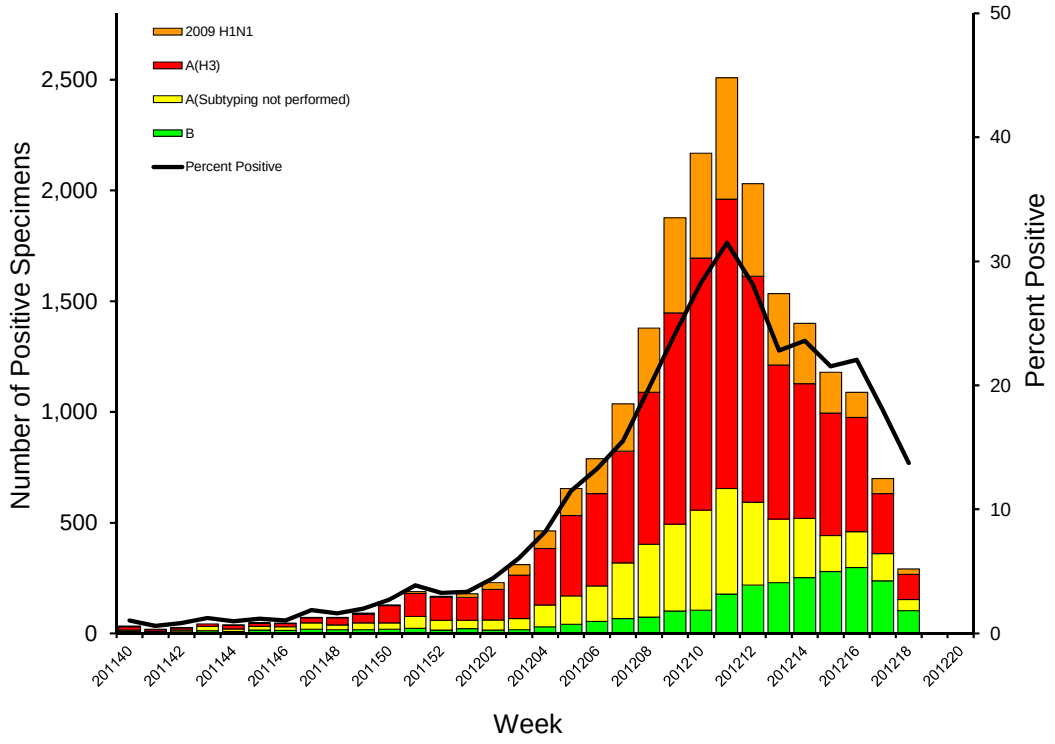
§ Includes all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands.

U.S. Virologic Surveillance: WHO and NREVSS collaborating laboratories located in all 50 states report to CDC the number of respiratory specimens tested for influenza and the number positive by influenza type and subtype. The results of tests performed during the current week are summarized in the table below.

	Week 18
No. of specimens tested	2,118
No. of positive specimens (%)	291 (13.7%)
Positive specimens by type/subtype	
Influenza A	188 (64.6%)
2009 H1N1	25 (13.3%)
Subtyping not performed	50 (26.6%)
(H3)	113 (60.1%)
Influenza B	103 (35.4%)

Predominant influenza viruses can vary by region and even between states within the same region. Seasonal influenza A (H3) viruses have predominated since the start of the 2011-2012 season nationally and in most regions, however 2009 H1N1 and influenza B viruses continue to circulate. The timing of influenza activity also can vary by region. While influenza activity may have peaked and be declining, or have already returned to summer baseline levels in some states or regions, it may be ongoing in other areas. Region specific data can be found at http://gis.cdc.gov/grasp/fluview/fluportaldashboard.html. Influenza viruses circulate year-round and activity may persist as late as May.

Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2011-2012 Season



Antigenic Characterization: CDC has antigenically characterized 1,438 influenza viruses [369 2009 H1N1 viruses, 817 influenza A (H3N2) viruses, and 252 influenza B viruses] collected by U.S. laboratories since October 1, 2011.

2009 H1N1 [369]

- Three hundred sixty-three (98.4%) of the 369 viruses were characterized as A/California/7/2009-like, the influenza A (H1N1) component of the 2011-2012 influenza vaccine for the Northern Hemisphere.
- Six viruses (1.6%) tested showed reduced titers with antiserum produced against A/California/7/2009.

Influenza A (H3N2) [817]

- Six hundred forty-eight (79.3%) of the 817 viruses were characterized as A/Perth/16/2009-like, the influenza A (H3N2) component of the 2011-2012 influenza vaccine for the Northern Hemisphere.
- One hundred sixty-nine viruses (20.7%) tested showed reduced titers with antiserum produced against A/Perth/16/2009.

Influenza B (B/Victoria/02/87 and B/Yamagata/16/88 lineages) [252]:

- **Victoria Lineage [117]**: One hundred seventeen (46.4%) of the 252 influenza B viruses tested belong to the B/Victoria lineage of viruses.
    - One hundred ten (94.0%) of these 117 viruses were characterized as B/Brisbane/60/2008-like, the influenza B component of the 2011-2012 Northern Hemisphere influenza vaccine.
    - Seven (6.0%) of these 117 viruses showed reduced titers with antisera produced against B/Brisbane/60/2008.

- **Yamagata Lineage [135]**: One hundred thirty-five (53.6%) of the 252 influenza B viruses tested belong to the B/Yamagata lineage of viruses.

While less than 50% of U.S. influenza B viruses tested this season are similar to the influenza B component in the 2011-2012 influenza vaccine, influenza B viruses account for only 12% of influenza positive tests reported to CDC this season. Worldwide, the majority of influenza B viruses circulating have been similar to the influenza B component of the 2011-2012 Northern Hemisphere influenza vaccine.

Composition of the 2012-2013 Influenza Vaccine: The World Health Organization (WHO) has recommended vaccine viruses for the 2012-2013 Northern Hemisphere influenza vaccines, and FDA's Vaccines and Related Biological Products Advisory Committee (VRBPAC) has made recommendations for the composition of the 2012-2013 U.S. influenza vaccines. Both agencies recommend that the vaccine contain A/California/7/2009-like (2009 H1N1), A/Victoria/361/2011-like (H3N2), and B/Wisconsin/1/2010-like (B/Yamagata lineage) viruses. This recommendation changes the influenza A (H3N2) and influenza B virus components of the 2011-2012 Northern Hemisphere vaccine formulation. This recommendation was based on global influenza virus surveillance data related to epidemiology and antigenic characteristics, serological responses to 2011-2012 trivalent seasonal vaccines, and the availability of candidate strains and reagents.

Antiviral Resistance: Testing of 2009 H1N1, influenza A (H3N2), and influenza B virus isolates for resistance to the neuraminidase inhibitors (oseltamivir and zanamivir) is performed at CDC using a functional assay. Additional 2009 H1N1 clinical samples are tested for a single mutation in the neuraminidase of the virus known to confer oseltamivir resistance (H275Y). The data summarized below combine the results of both testing methods. These samples are routinely obtained for surveillance purposes rather than for diagnostic testing of patients suspected to be infected with an antiviral resistant virus.

High levels of resistance to the adamantanes (amantadine and rimantadine) persist among 2009 H1N1 and A (H3N2) viruses (the adamantanes do not have activity against influenza B viruses). As a result of the sustained high levels of resistance among circulating influenza A viruses, data from adamantane resistance testing are not presented in the table below.

Neuraminidase Inhibitor Resistance Testing Results on Samples Collected Since October 1, 2011.

	Oseltamivir		Zanamivir	
	Virus Samples Tested (n)*	Resistant Viruses, Number (%)	Virus Samples Tested (n)	Resistant Viruses, Number (%)
Influenza A (H3N2)	1,196	0 (0.0)	1,196	0 (0.0)
Influenza B	271	0 (0.0)	271	0 (0.0)
2009 H1N1	1,129	16 (1.4)	478	0 (0.0)

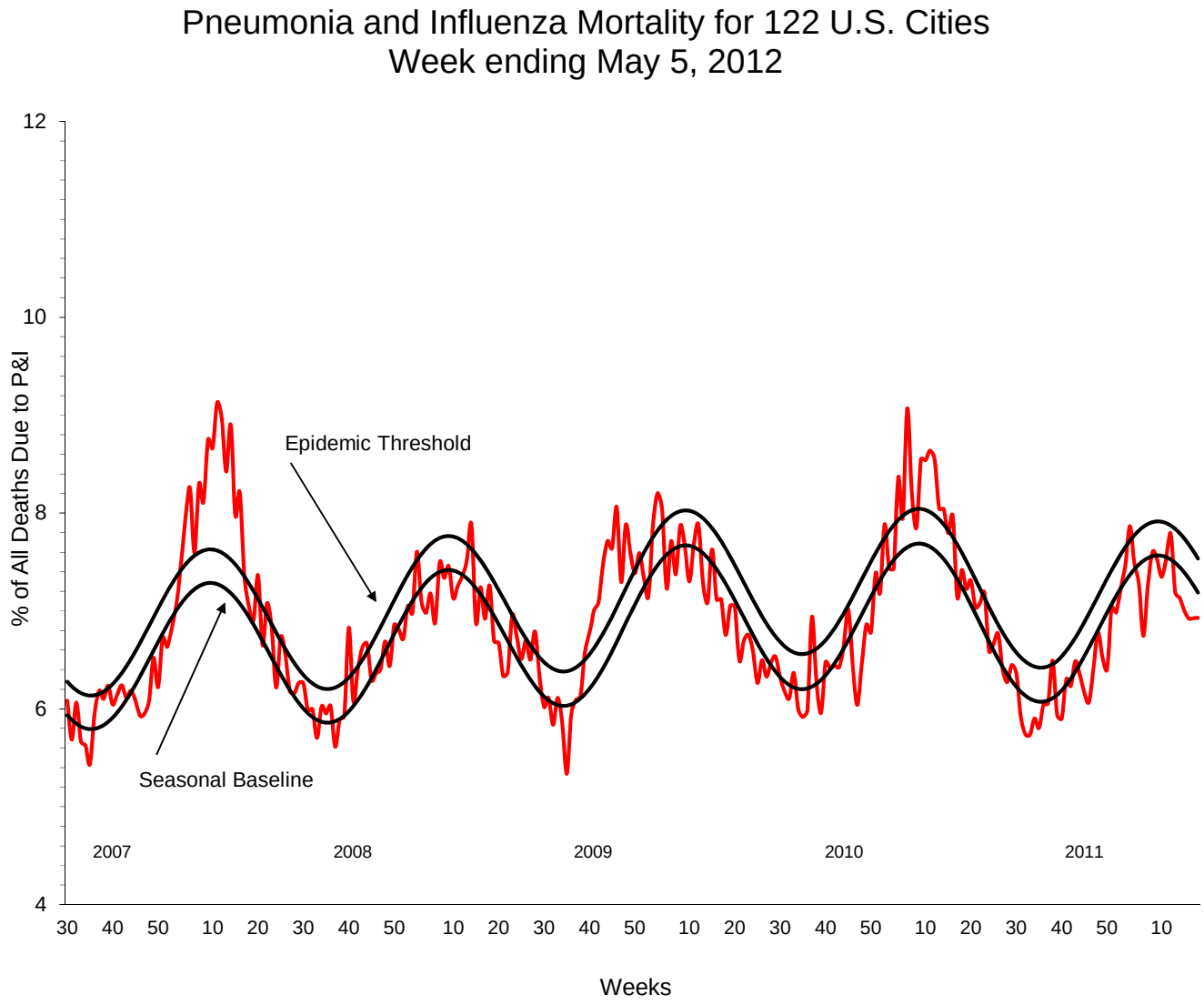
*Includes specimens tested in national surveillance and additional specimens tested at public health laboratories in nine states (DE, FL, MD, MI, MN, NY, TX, WA, and WI) who share testing results with CDC.

So far this season, 16 oseltamivir-resistant 2009 H1N1 viruses have been detected nationally. Three patients were using oseltamivir for 1 day or more at the time of specimen collection. Thirteen had no exposure to oseltamivir; out of those 13 patients, 2 had family members using oseltamivir. (Resistance of influenza A viruses to antiviral drugs can occur spontaneously or emerge during the course of antiviral treatment or antiviral exposure)

Eleven of the 16 oseltamivir-resistant viruses were collected from January to April 2012 and are from Texas, where a total of 421 2009 H1N1 specimens have been tested for oseltamivir resistance. Oseltamivir resistance remains quite low nationally and in Texas, even though the percentage of oseltamivir-resistant 2009 H1N1 viruses in Texas (2.6%) is higher than the national percentage. CDC continues to recommend the use of oseltamivir or zanamivir as early as possible for patients with confirmed or suspected influenza who have severe, complicated, or progressive illness; who require hospitalization; or who are at greater risk for influenza-related complications. Use of the adamantanes is not recommended.

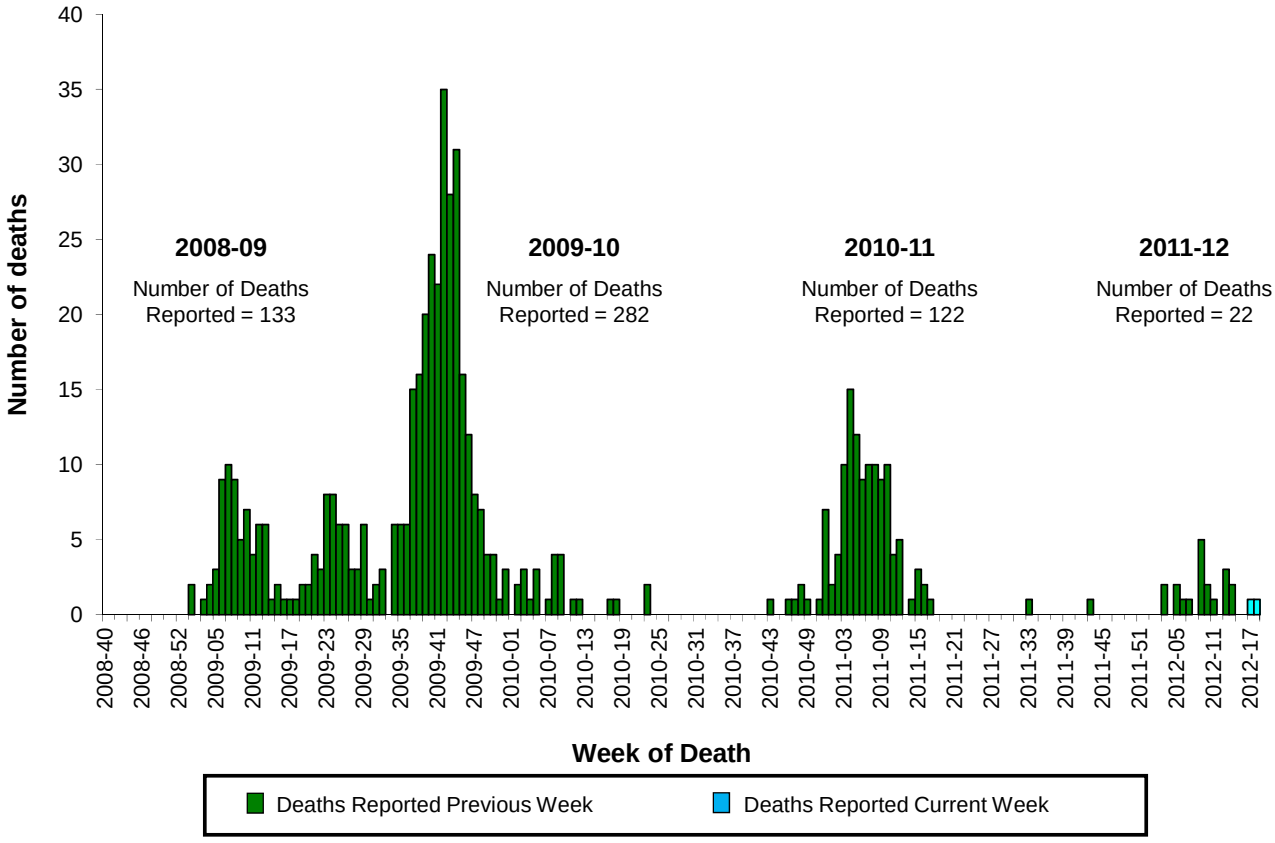
Additional information on recommendations for treatment and chemoprophylaxis of influenza virus infection with antiviral agents is available at http://www.cdc.gov/flu/antivirals/index.htm.

Pneumonia and Influenza (P&I) Mortality Surveillance: During week 18, 6.9% of all deaths reported through the 122-Cities Mortality Reporting System were due to P&I. This percentage was below the epidemic threshold of 7.5% for week 18.



Influenza-Associated Pediatric Mortality: Two influenza-associated pediatric deaths were reported to CDC during week 18. One was associated with an influenza B virus and 1 was associated with an influenza A virus for which the subtype was not determined. The deaths reported during week 18 occurred during the weeks ending April 28, 2012 (week 17) and May 5, 2012 (week 18). This brings the total number of influenza-associated pediatric deaths reported during the 2011-2012 season to 22. Additional data can be found at: http://gis.cdc.gov/GRASP/Fluview/PedFluDeath.html.

Number of Influenza-Associated Pediatric Deaths by Week of Death: 2008-09 season to present

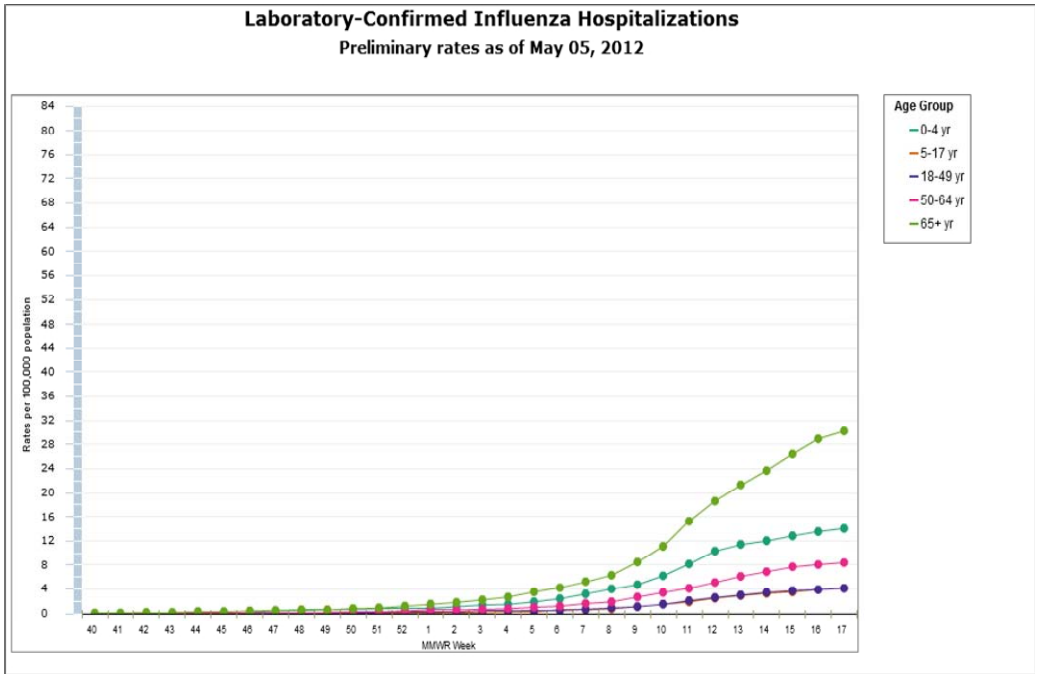


Influenza-Associated Hospitalizations: The Influenza Surveillance Network (FluSurv-NET) conducts population-based surveillance for laboratory-confirmed influenza-related hospitalizations in children younger than 18 years of age (since the 2003-2004 influenza season) and adults (since the 2005-2006 influenza season).

The FluSurv-NET covers more than 80 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, TN) and additional Influenza Hospitalization Surveillance Project (IHSP) states. The IHSP began during the 2009-2010 season to enhance surveillance during the 2009 H1N1 pandemic. IHSP sites included IA, ID, MI, OK and SD during the 2009-2010 season; ID, MI, OH, OK, RI, and UT during the 2010-2011 season; and MI, OH, RI, and UT during the 2011-2012 season. The rates provided are likely to be a vast underestimate of the actual number of influenza-related hospitalizations. First, the FluSurv-NET is not nationally representative, and second, influenza-related hospitalizations can be missed, either because testing is not performed, or because cases may be attributed to other causes of pneumonia or other common influenza-related complications.

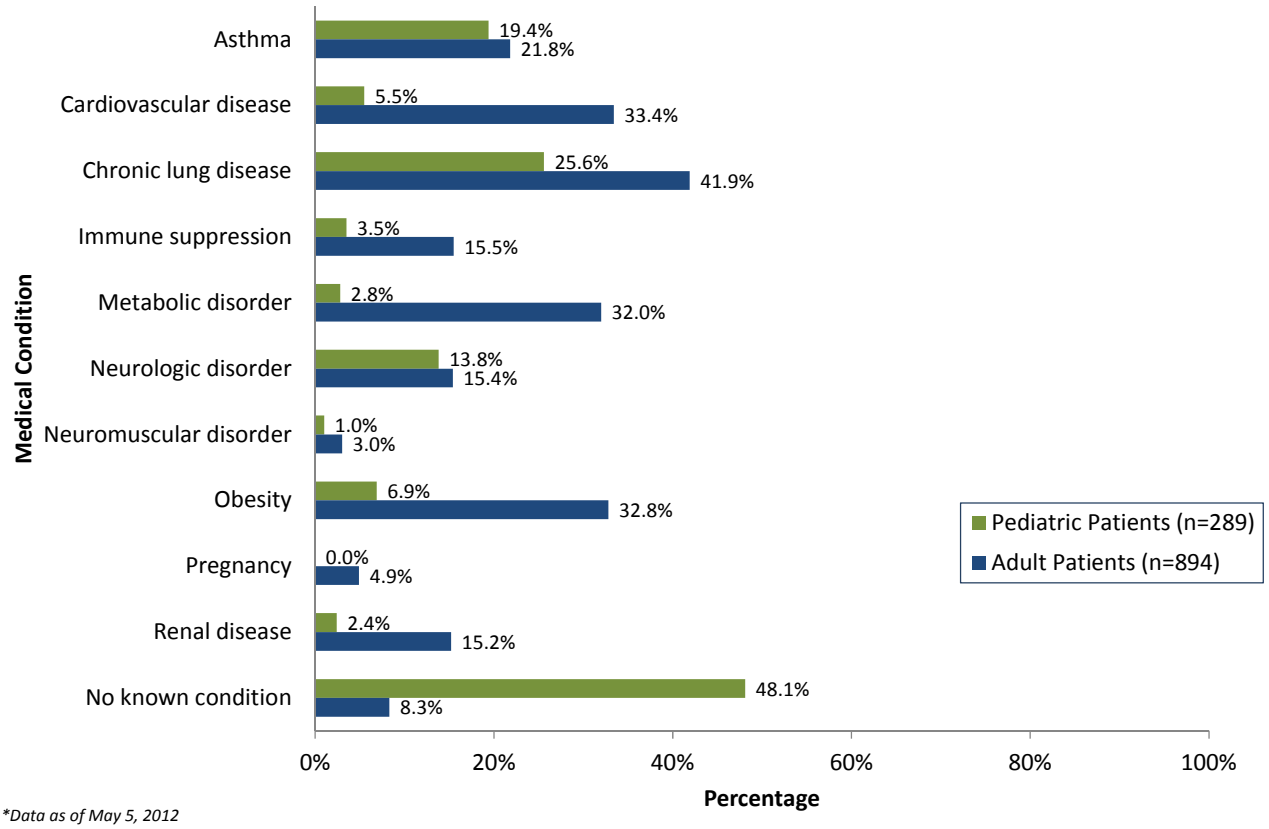
Between October 1, 2011 and April 30, 2012, 2,347 laboratory-confirmed influenza-associated hospitalizations were reported at a rate of 8.5 per 100,000 population. Among cases, 2,032 (86.6%) were influenza A, 293 (12.5%) were influenza B, and 7 (0.3%) were influenza A and B co-infections; 15 (0.6%) had no virus type information. Among those with influenza A subtype information, 844 (74.6%) were H3N2 and 281 (24.8%) were 2009 H1N1. The most commonly reported underlying medical conditions among adults were chronic lung diseases (of which 52.0% were asthma), cardiovascular disease and obesity. The most commonly reported underlying medical conditions in children were chronic lung diseases (of which 75.7% were asthma) and neurologic disorders. However, almost half of hospitalized children had no identified underlying medical conditions.

The current season's influenza-associated hospitalization data includes patients admitted from October 1, 2011 through April 30, 2012; however, these data will continue to be updated as additional information is received.



Data from the Influenza Surveillance Network (FluSurv-NET), a population-based surveillance for influenza related hospitalizations in children and adults in 14 US states. Incidence rates are calculated using the National Center for Health Statistics' (NCHS) population estimates for the counties included in the surveillance catchment area.

Selected underlying medical conditions[1] among laboratory-confirmed influenza-associated hospitalizations, FluSurv-NET, 2011-2012[2]

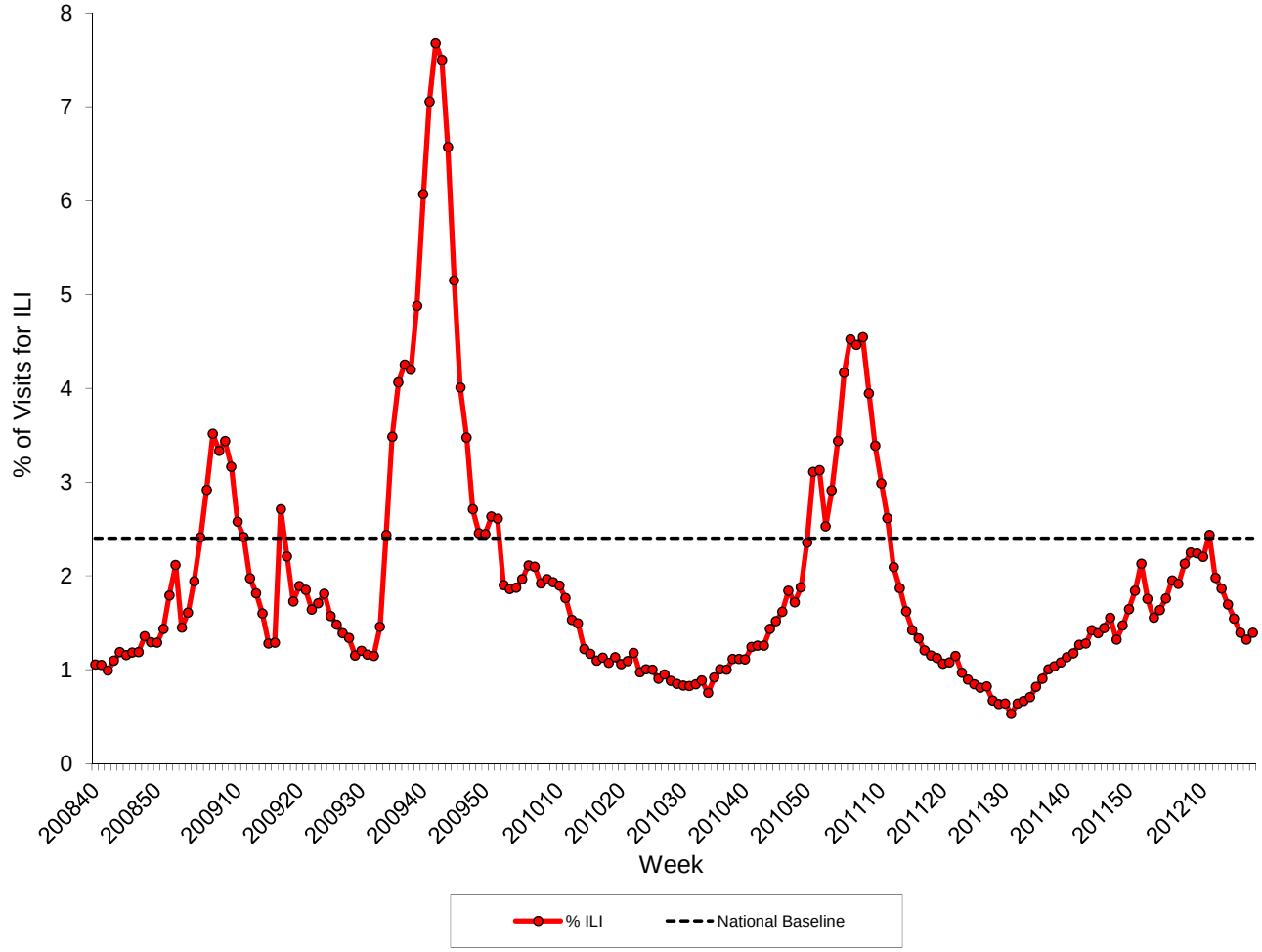


Data as of May 5, 2012

[1]Asthma includes a diagnosis of asthma or reactive airway disease; Cardiovascular diseases include conditions such as coronary heart disease, cardiac valve disorders, congestive heart failure, pulmonary hypertension, and aortic stenosis; Chronic lung diseases include conditions such as asthma, bronchiolitis obliterans, chronic aspiration pneumonia, and interstitial lung disease; Immune suppression includes conditions such as immunoglobulin deficiency, leukemia, lymphoma, HIV/AIDS, and individuals taking immunosuppressive medications; Metabolic disorders include conditions such as diabetes mellitus, thyroid dysfunction, adrenal insufficiency, and liver disease; Neurologic diseases include conditions such as seizure disorders, cerebral palsy, and cognitive dysfunction; Neuromuscular diseases include conditions such as multiple sclerosis and muscular dystrophy; Obesity was assigned if indicated in patient's medical chart or if body mass index (BMI) >30 kg/m2 ; Renal diseases include conditions such as acute or chronic renal failure, nephrotic syndrome, glomerulonephritis, and impaired creatinine clearance.
[2]Only includes cases for which data collection has been completed through the medical chart review stage.

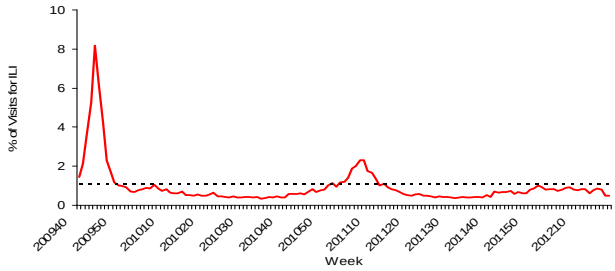
Outpatient Illness Surveillance: Nationwide during week 18, 1.4% of patient visits reported through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet) were due to influenza-like illness (ILI). This percentage is below the national baseline of 2.4%. *(ILI is defined as fever (temperature of 100°F [37.8°C] or greater) and cough and/or sore throat.)*

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, September 30, 2008 – May 5, 2012

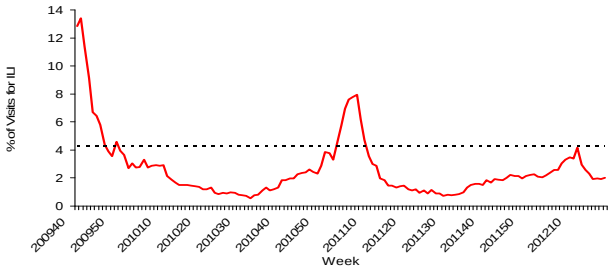


On a regional level, the percentage of outpatient visits for ILI ranged from 0.5% to 2.5% during week 18. All regions reported a proportion of outpatient visits for ILI below region-specific baseline levels.

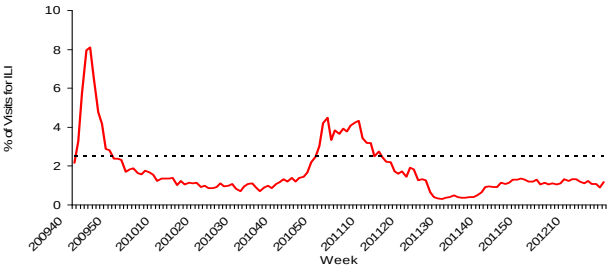
Region 1 - CT, ME, MA, NH, RI, VT



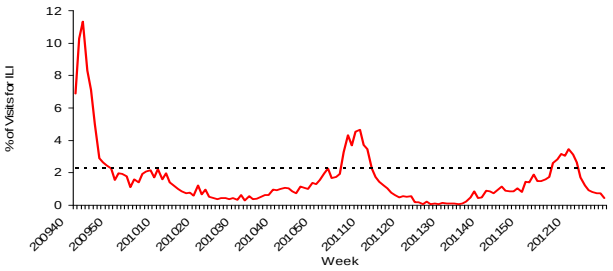
Region 6 - AR, LA, NM, OK, TX



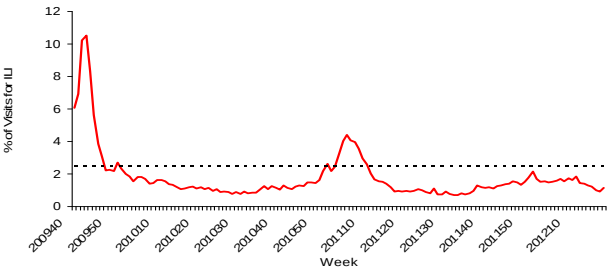
Region 2 - NJ, NY, USVI



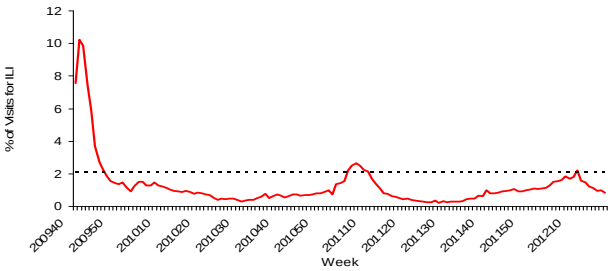
Region 7 - IA, KS, MO, NE



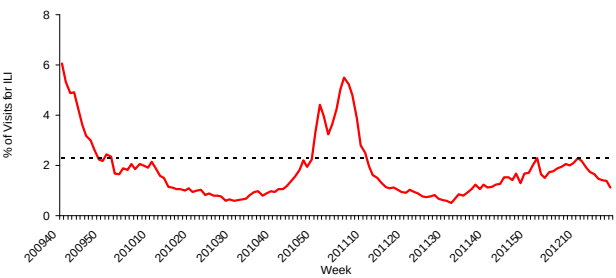
Region 3 - DE, DC, MD, PA, VA, WV



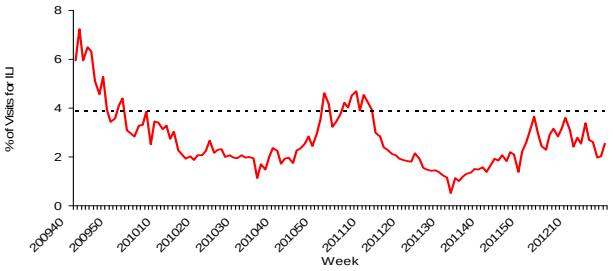
Region 8 - CO, MT, ND, SD, UT, WY



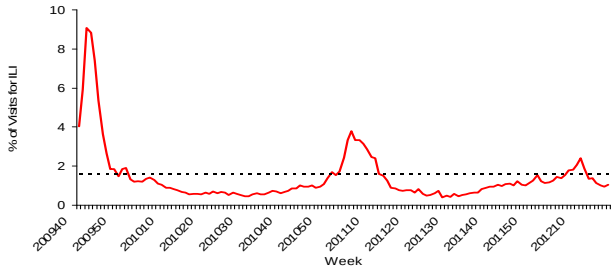
Region 4 - AL, FL, GA, KY, MS, NC, SC, TN



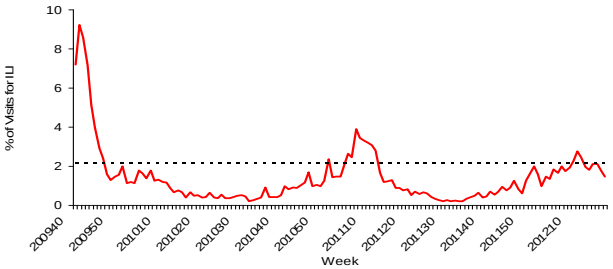
Region 9 - AZ, CA, HI, NV



Region 5 - IL, IN, MI, MN, OH, WI



Region 10 - AK, ID, OR, WA



NOTE: Scales differ between regions

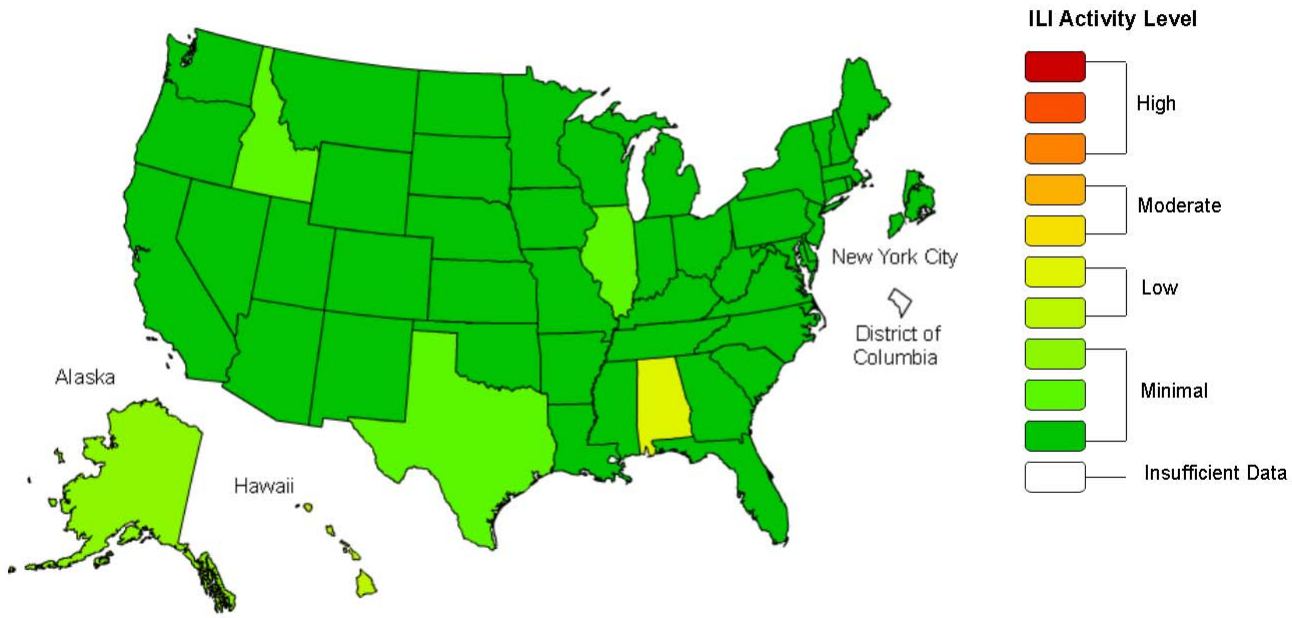
*Use of the regional baselines for state data is not appropriate.

ILINet State Activity Indicator Map: Data collected in ILINet are used to produce a measure of ILI activity* by state. Activity levels are based on the percent of outpatient visits in a state due to ILI and are compared to the average percent of ILI visits that occur during spring and fall weeks with little or no influenza virus circulation. Activity levels range from minimal, which corresponds to ILI activity being below average, to intense, which corresponds to ILI activity being much higher than average. Because the clinical definition of ILI is very general, not all ILI is caused by influenza viruses; however, when combined with laboratory data, the information on ILI activity provides a clearer picture of influenza activity in the United States.

During week 18, the following ILI activity levels were experienced:

- Two states experienced low ILI activity (Alabama and Hawaii).
- New York City and 48 states experienced minimal ILI activity (Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Illinois, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming).
- Data were insufficient to calculate an ILI activity level from the District of Columbia.

Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet
2011-12 Influenza Season Week 18 ending May 05, 2012

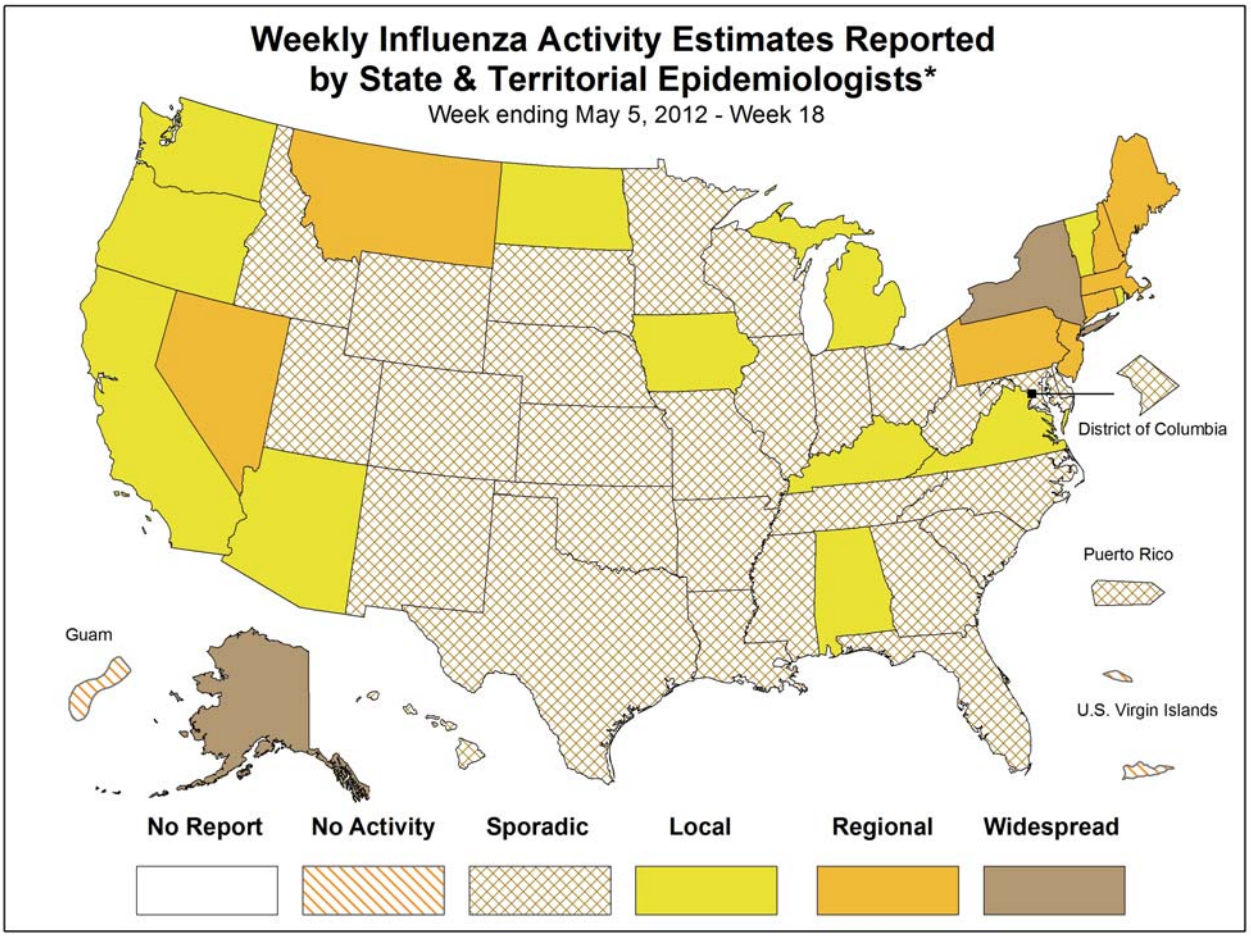


*This map uses the proportion of outpatient visits to health care providers for influenza-like illness to measure the ILI activity level within a state. It does not, however, measure the extent of geographic spread of influenza viruses within a state. Therefore, outbreaks occurring in a single city could cause the state to display high activity levels.
Data collected in ILINet may disproportionally represent certain populations within a state, and therefore, may not accurately depict the full picture of influenza activity for the whole state.
Data displayed in this map are based on data collected in ILINet, whereas the State and Territorial influenza activity map is based on reports from state and territorial epidemiologists. The data presented in this map is preliminary and may change as more data is received.
Differences in the data presented here by CDC and independently by some state health departments likely represent differing levels of data completeness with data presented by the state likely being the more complete.

Geographic Spread of Influenza as Assessed by State and Territorial Epidemiologists: The influenza activity reported by state and territorial epidemiologists indicates geographic spread of influenza viruses, but does not measure the intensity of influenza activity.

During week 18, the following influenza activity was reported:

- Widespread influenza activity was reported by 2 states (Alaska and New York).
- Regional influenza activity was reported by 8 states (Connecticut, Maine, Massachusetts, Montana, Nevada, New Hampshire, New Jersey, and Pennsylvania).
- Local influenza activity was reported by 12 states (Alabama, Arizona, California, Iowa, Kentucky, Michigan, North Dakota, Oregon, Rhode Island, Vermont, Virginia, and Washington).
- Sporadic influenza activity was reported by the District of Columbia, Puerto Rico, and 28 states (Arkansas, Colorado, Delaware, Florida, Georgia, Hawaii, Illinois, Idaho, Indiana, Kansas, Louisiana, Maryland, Minnesota, Mississippi Missouri, Nebraska, New Mexico, North Carolina, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, West Virginia, Wisconsin and Wyoming).
- Guam and the U.S. Virgin Islands reported no influenza activity.



* This map indicates geographic spread & does not measure the severity of influenza activity

A description of surveillance methods is available at: http://www.cdc.gov/flu/weekly/overview.htm
Report prepared: May 11, 2012.

Additional National and International Influenza Surveillance Information

Google Flu Trends: Google Flu Trends uses aggregated Google search data in a model created in collaboration with CDC to estimate influenza activity in the United States. For more information and activity estimates from the U.S. and worldwide, see http://www.google.org/flutrends/.

Europe: For the most recent influenza surveillance information from Europe, please see WHO/Europe at http://www.euroflu.org/index.php and visit the European Centre for Disease Prevention and Control at http://ecdc.europa.eu/en/publications/surveillance_reports/influenza/Pages/weekly_influenza_surveillance_overview.aspx.

Public Health Agency of Canada: The most up to date influenza information from Canada is available at http://www.phac-aspc.gc.ca/fluwatch/.

World Health Organization FluNet: Additional influenza surveillance information from participating WHO member nations is available through FluNet and the Global Epidemiology Reports.